CRYSTAL AUDIO

THX-T3

THX-B1

THX-ST

THX-C

THX-D

THX-10SUB

THX-10SUBt

THX-12SUB

INSTRUCTIONS MANUAL

THX SELECT™ SYSTEMS

Please go to the last pages to read the documentation of the TX-T2 and TX-B1 speakers

⚠ PRECAUTIONS

- Ensure your receiver or multichannel amplifier is switched off before connecting speakers
- Before powering the subwoofer make sure the local operating voltage is the same as that specified for your unit
- Turn subwoofer off before connecting the input cable
- Be sure to connect plus (+) and minus (-) terminals of the speakers' binding posts to the corresponding plus (+) and minus (-) terminals of the receiver or multichannel amplifier
- Make sure that all connections are secure, especially if using bare speaker wires
- Contact between stray bare wires between plus (+) and minus (-) terminals may cause a damaging short-circuit
- Avoid using equalizers that may add distortion
- Your THX Select Certified speakers are built to tightly controlled tolerances and specifications so dispersion and frequency response are optimized by design, even at high output levels
- There is risk of damaging your speaker drivers with low-power amplifiers operating at or near their power limits
- Clipping can destroy individual drivers, usually the tweeter
- That's why all Crystal Acoustics speakers feature Electronic Tweeter Protection
- Receivers and multichannel power amplifiers of at least 80 WRMS are recommended
- Do not drive speakers with continuous power exceeding the maximum indicated in the instruction manual for each speaker model (See Specifications Section 6.)
- Use the best quality speaker cables and interconnect possible
- Connect speakers cables to the upper pair of binding posts when single-wiring and let the jumper links take the signal to the lower frequency drivers
- Do not place loudspeakers in dusty or humid environments
- Avoid exposure to direct sunlight

1. Introduction

Congratulations!!!

Crystal Audiovideo Ltd., the manufacturer of Crystal Audio and Crystal Audiovideo products, introduces Crystal Acoustics, a new brand for the USA and Canada.

Your new speakers, built to the highest standards, meet all the technical requirements for state-of-the-art sound reproduction. Our THX Select Subwoofers will bring ultimate bass performance to your home entertainment system.

INDEX

1.1 THX Select Certified Products

THX, the trademark of THX Ltd., is the ultimate set of standards for home theater sound. It incorporates a series of patented electronic and loudspeaker specifications designed to bring the big theater experience right into your home.

THX was indeed the first standard, but Lucasfilm THX realized their specification must adjust for differently sized home entertainment environments. THX Select is their reference standard for smaller rooms, calibrated to define reference level performance in rooms of about 2000 square feet.

Visit www.thx.com for more information on THX and their innovative technologies.

1.2 THX Select Certified Speaker Features

Crystal Acoustics speaker systems, optimized for a stupendous, powerful and dynamic surround sound presentation, still delivers nuanced, high performance multichannel music when required.

They feature:

- **Absolutely flat frequency response**
- **Easy placement:**
  - **THX Bass Management** specifications minimize interaction between speakers and the room boundaries--i.e., walls, corners, etc.
  - **Free Air Rotating Spherical Tweeter** avoids diffraction effects improving high frequency performance
  - Avoids having to move the whole speaker to set the tweeters for the right balance between a big coherent soundstage and image focus
- **Electronic protection for the tweeters**
- **Wide horizontal dispersion** characteristics for wideband flat frequency response throughout the room
- **Controlled vertical dispersion** diminishes ceiling and floor reflections for superior air, soundstage, and imaging focus
- **High sound levels and dynamics capability**
  - **High sensitivity** means even a relatively low-power A/V receiver or multichannel amplifier can drive them as long as they can support multiple 4 ohm loads
  - **High power** handling means they're safe to use with powerful A/V receivers or big multichannel amplifiers
- **Dipole speakers:** THX recommend dipole surround speakers to more faithfully reproduce the surround effects of movie theaters
  - Wide dispersion characteristics accurately reproduces the sound of two rows of side-mounted speakers
- **Timbre matching:** Your THX-System speakers have similar tonal characteristics because of similar or identical crossover topology, smooth frequency response, and quality drivers
- **Full magnetic shielding:** Your THX-System are fully shielded for safe placement as near the TV/video display as needed

THX Select Certified Subwoofers Feature:

- **Flat anechoic response** from 35Hz to 200Hz and accurate in-room response from 19Hz to 350Hz
- **Sturdy cabinet construction** with internal bracing
- The **THX-10SUBt** combines foundation-shaking bass power and furniture-grade cabinetry with an attractive glass top
- **High quality, powerful built-in amplifiers**
- **Long throw woofers** with huge magnets for a deep and powerful bottom-end
- **Accurate bass performance** to THX standards when using one THX-12SUB or two THX-10SUB subwoofers
- **Power savings** when subwoofer automatically switches to stand-by mode after 10 minutes of no input
- Power consumption is very low In stand-by
- The LED on the subwoofer's rear panel lights orange for stand-by, red for operational
- **Note:** Power should be turned off when the subwoofer is unused for long periods of time
- **Automatic power on** in stand-by when signal appears at the subwoofer's input
- Switching the subwoofer off then on again also restores it to operation

1.2.1 THX Select Certified Systems

The Crystal Acoustics THX Speaker System:

- Two THX-T3 floorstanders or THX-B1 for left and right front channels as found in all THX-Systems
- One THX-Center channel speaker also used in all THX-Systems
- Two THX-Dipole wall-mounted speakers for the surround channels
- THX-Surround speakers for the surround channels
- One THX-12SUB THX Select Certified Subwoofer
- Or Two THX-10SUB or THX-10SUBt Subwoofers to meet THX Select Certified requirements

2. Positioning your THX Surround Sound Speakers

Your THX-System speakers are designed for high performance multichannel sound in a variety of listening environments. They deliver powerful, engaging, you-are-there movie soundtracks, plus a nuanced, detailed and dynamic musical presentation.

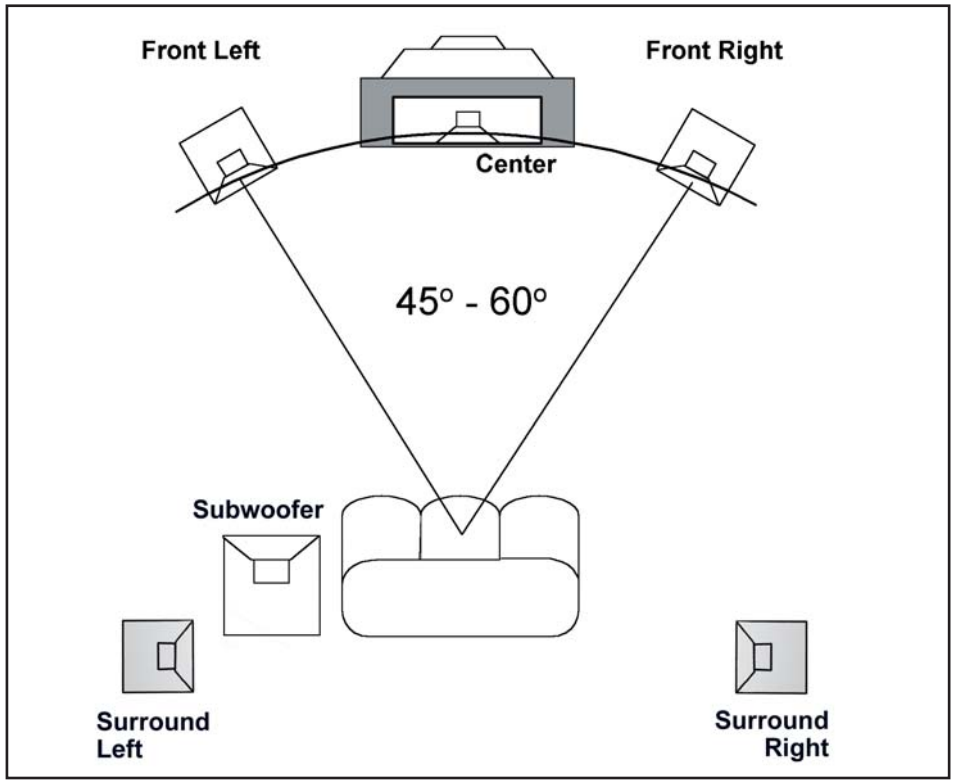


Figure 1: Speaker Configuration for 5.1 Systems

Follow these suggestions for best results:

- All five speakers in a 5.1 system would ideally be equidistant from the listener. That way receivers and processors wouldn't have to electronically time delay the sound from each speaker to arrive at the listening area at same time.
- Speaker output levels must be adjusted for equal output at the listening position.
- Our new patented External Rotating Tweeter optimizes high frequency reproduction without having to rotate the entire speaker cabinet
- Turn the Free Air top-mounted Spherical Tweeters to point towards the listening area
- Experiment by toeing the spherical tweeters inward and just outward of the listening position for the best compromise between solid image focus and overall size of the soundstage

2.1 Front Speakers

The front L/R speakers are largely responsible for producing powerful dynamics, a textured midrange, clear, accurate highs, plus soundstage imaging, stability and focus. THX technical specifications for front and center speakers improve dialog intelligibility and support soundstage size and imaging in two ways:

- Flat frequency response and wide horizontal dispersion characteristics assure off-axis listeners enjoy surround effects as well as those in the middle
- Controlled vertical dispersion lowers ceiling and floor reflections that muddy intelligibility, soundstage integrity, and focus

2.1.1 Placement of THX-T3 Front Tower Speakers

- Place front speakers equidistantly and slightly in front of the TV/video display
- Measure the distance between the left and right front speakers
- Measure the distance between the listening position and the midpoint between the front speakers
- The difference should be no more than 15% of the L/R speaker distance
- Angle the Spherical Tweeter Enclosures inwards towards the listening area.
- Find the optimum tweeter angle that produces a wide yet focused soundstage
- Adjust the speakers so the tweeters are at about ear height if possible
- Move the speakers towards the wall to reinforce bass frequencies, and away to reduce them
- Sometimes small changes can have a big result, so it's worth experimenting
- Do not place them too far apart or you'll have a hole in the center of the soundstage
- Do not place them too close together or the soundstage collapses into a fuzzy mono ball of sound with no definition or separation

2.1.2 Placement of THX-Center Speaker

- **TV/Video Displays:** Place the Center-THX directly above or below the screen, whichever best points towards ear level
- **Projector Displays:** Place the Center-THX behind or in front of the screen whether it is acoustically transparent or not

2.2 Surround Speakers

Surround speaker placement depends on the audio format (5.1,7.1, etc.) and the speakers in use. Dipoles create a diffused soundfield ideal for surround effects. It's preferred for best performance from THX Select Certified systems.

Your THX-Dipole surround speaker provides Movie Theater sound as immersive and dynamically impressive as THX standards can make them. A dipole speaker "paints" the walls and ceiling with sound. There's very little direct output toward the listener. The reflected sound off the room's walls and ceiling creates an inviting, enveloping, experiential soundfield, immersing you directly into the movie experience. Once you heard a properly set up system, it's hard to go back to anything else as it improves the entire experience no matter what you're watching... or listening to.

2.2.1 Placement of THX-Dipole Surround Speakers

The total of a speaker's radiated energy in all directions is called its power response. Your Crystal Acoustics THX-Dipole surround speaker exhibits a THX-mandated flat power response. The total energy radiated by a speaker--to the front, above, below, behind, and to the sides--must together average a flat response. Listeners anywhere in the soundfield will enjoy surround effects

- Mount your THX-Dipoles on the side walls adjacent to the listening position about 2ft (66cm) above ear height

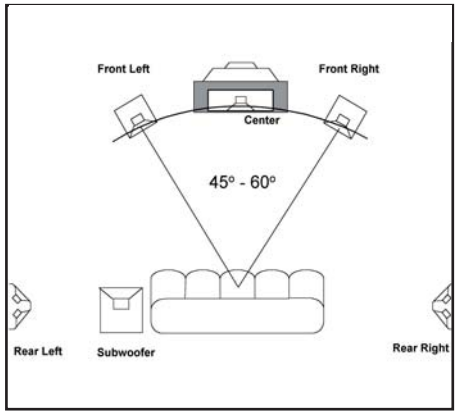


Figure 2: Dipole placement

2.2.2 Placement of THX-Surround Speakers

In some cases, on-wall dipoles aren't practical because of a room's layout. Just place another pair of THX-Surround speakers behind the listening area for the same THX Select Certified home theater surround experience.

- Place the THX-Surround Speakers slightly behind the primary listening position
- Adjust them to face each other behind the seating area
- Optionally, experiment by adjusting the speakers to point at an angle towards the back or side walls
- The sound reflects off the walls before reaching the listening area which simulates the L/R speaker arrays found in many movie theaters

2.3 THX-12SUB, THX-10SUB and THX-10SUBt Subwoofers

Best positioning for one subwoofer can generally be found using the following suggestions:

- Try placing the subwoofer close to the listening position
- Avoid positioning it equidistantly from room boundaries like walls
- Avoid positioning it near corners where walls are not of solid construction
- Corner placement may excite room resonance resulting in boomy, muddy bass
- Further experiment with speaker positioning; place the subwoofer near your listening position and play jazz with acoustic bass and move around the room
- Place the subwoofer where you hear the deepest, best controlled and most articulate bass frequencies.

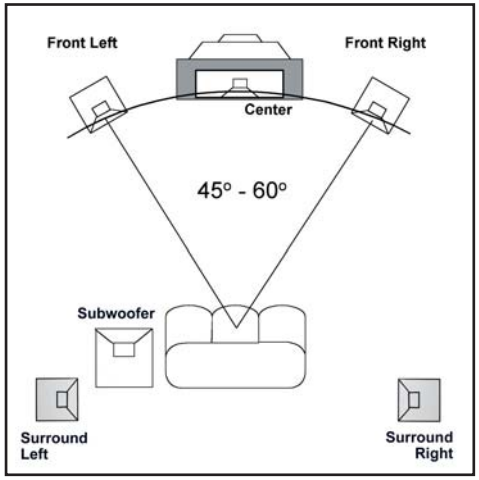


Figure 3: Placement of one subwoofer

2.3.1 Multiple Subwoofers

Two Subwoofers

- Two subwoofers drive low frequencies more uniformly throughout the room because they:
  - Reduce resonant modes and standing waves
  - Extend bass response
- Improves bass impact, slam, definition and control
- Delivers higher sound pressure levels and superior dynamics for movies and multichannel music
- Using two THX-10SUB or THX-10SUBt subwoofers brings the system up to THX Select Certified specification
- Place each subwoofer at the midpoint of the opposing wall

Four Subwoofers

- Four THX-SUB subwoofers delivers stupendous, earth shattering bass to your home entertainment system
- Really pressurizes a room and improves low-frequency extension
- Improves the power response almost everywhere in the listening area
- Place each subwoofer at the four walls' midpoint

3. THX-System Speakers connections

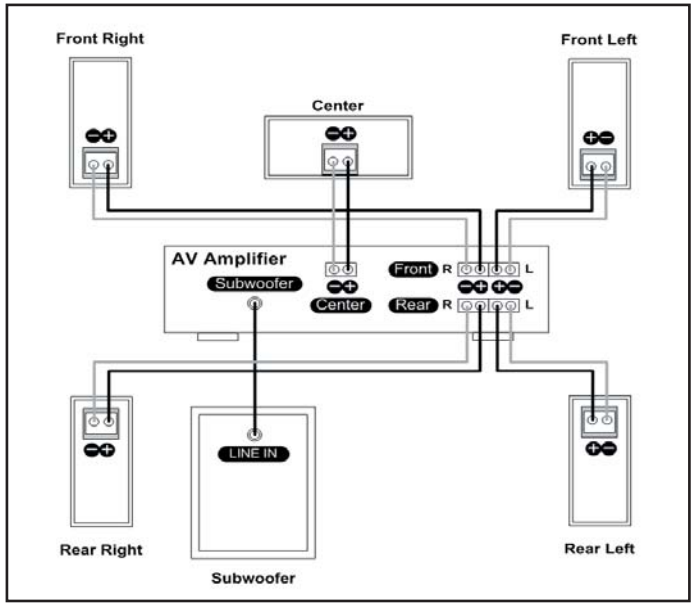


Figure 4: Speaker Connections

CAUTION:

All Equipment

Must Be

Powered Off

Before Making

Any Connections

Attach speaker cables to the binding posts on the rear panel of the speaker cabinets. Our biwiring terminals allow a variety of connection methods.

1. Single Pair: For each channel, jumper links in place, connect the speaker cable's red positive (+) connector to the red positive output binding post of your receiver or multichannel amplifier, and the black negative (-) connector to the black output terminal. Switching positive and negative on one channel's connections reduces bass output and creates ill-defined, bloated imaging. Once you hear the effect, it's easy to recognize. Tip: Connect the speaker cable to the upper tweeter binding posts on the speaker, letting the jumper links take the signal to the low frequency drivers for cleaner, more extended highs.

2. Biwire - Two Cables Per Side: Remove all jumper links for biwire operation! Attach another pair of speaker cables between the speaker's low frequency output binding posts and your receiver or multichannel amplifier, keeping red and black polarity correct. Tip: Biwiring improves the resolution of low-level details, the foundation of all high performance sound. Incorrect polarity will sound as above and interfere with proper frequency response.

Make sure to use the correct set of receiver of multichannel output terminals for each speaker

- **Left and Right Front Speakers:** Use the **Left and Right Front** output binding post terminals on your receiver or multichannel amplifier to connect your **THX-T3** floorstanding speakers
- **Center Channel Speaker:** Use the **Center** output terminals on your receiver or multichannel amplifier to connect the **THX-Center** speaker
- **Surround Speakers:** Use two **Surround** output binding post terminals on your receiver or multichannel amplifier to connect the two THX-Dipole speakers

4. THX-12SUB, THX-10SUB and THX-10SUBt Controls

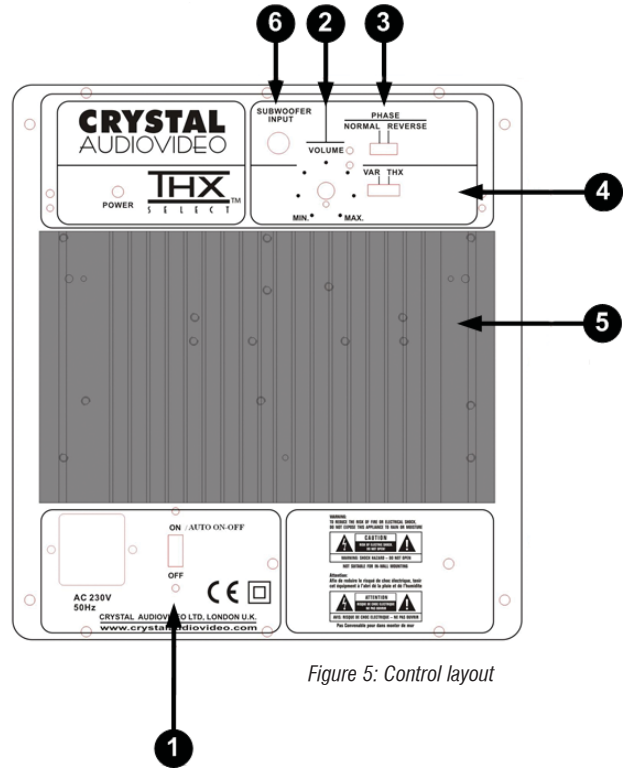


Figure 5: Control layout

1 **POWER ON/OFF** Switch (always on standby when ON) and power indicator

2 **VOLUME** Control

3 **PHASE** Switch

4 **MODE** Switch for **THX** and **SUB**

5 **HEAT SINK**

6 **LOW LEVEL INPUT**

Your THX-SUB Subwoofer has three control switches on the back panel:

1. Operational Mode Switch o THX or Variable positions
- ➢ THX position:
  - • **For one THX-12SUB, two THX-10SUB, or two THX-10SUBt** subwoofers
    - ○ Meets all required specifications for THX Select Certification
  - • **For one THX-10SUB or one THX-10SUBt**
    - ○ Meets all required specifications for THX Select Certification but amplifier gain is 4.5dB lower
- ➢ Variable position: The THX-SUB operates under THX specifications except for the internal amplifier's gain.
- ➢ You can change the output level in Variable mode with the Volume Control knob

2. Volume Control knob: Rotating increases or decreases the output sound level of your THX-SUB when in Variable Mode

3. Phase switch: Controls the phase of the subwoofer's low frequency output

4. Choose between Normal and Reverse positions and stay with the one that produces the most powerful, deepest and most controlled bass response in your room

5. Subwoofer Installation Guide

The following instructions are for THX Certified as well as non-certified Dolby Digital/DTS A/V receivers or surround processors.

1. Turn off your receiver or multichannel amplifier and make sure the THX-SUB is off
2. Use high quality shielded interconnect with RCA connectors to link the THX-SUB to the output of your receiver or multichannel amplifier
3. Set the Operational Mode switch on your THX-SUB to the THX position
4. Set the Phase switch to Normal
5. Turn on your system and the THX-SUB
6. Navigate to the Speaker Setup menu of your receiver or processor to calibrate channel level and size of your front, center and surround speakers
7. Set your main and surround speakers to Small on your receiver or processor
8. Set the roll off point to the following:
   - 80Hz (THX standard) for THX Select loudspeakers
   - 120-150Hz for other small speakers (Crystal Acoustics Plasma, SmArt System and Super Baby series)
   - The higher the crossover, the better the power handling of your main speakers
11. Change the Phase Control of your THX-SUB between Normal and Reverse positions
12. Listen to music with prominent bass
13. Stay with the switch position that produces the fullest, deepest and tightest bass in your listening area
14. Use the pink noise test signal of your receiver, processor or Test-DVD
15. Take a seat at the main listening and viewing position
16. Use an SPL meter (C scale, slow) and calibrate the output sound level of each channel (fronts, center, surrounds) plus your subwoofer so that all outputs levels are equal
17. When using a single THX-10SUB or THX-10SUBt subwoofer, you must increase the subwoofer output level of your receiver or processor by 4.5dB to get the proper bass levels to meet THX standards
18. Connection of multiple subwoofers to a receiver or processor with only one SUB/LFE output can be accomplished with Y-adapters (RCA male to two RCA female connectors)

6. Troubleshooting

6.1 No sound from THX-SUB

- Make sure your THX-SUB is plugged into an AC outlet
- Make sure the LED on the back of the THX-SUB is on and lit red (operating) and not orange (stand-by)
- Otherwise switch the subwoofer's power off then on again
- Make sure the **Subwoofer Y/N** option is set to Yes in your receiver or processor's speaker setup menu
- Make sure the Volume Control is not set to Minimum if the subwoofer's in Variable Mode
- Make sure your subwoofer interconnect is functioning properly and replace any defective cables

6.2 Boomy, dull, out of focus low frequencies

- Try moving your subwoofer away from corners or walls in small steps
- The boom results from exciting room resonances
- Small changes in position can make a big difference

6.3 50/60 cycle hum coming from the subwoofer

Your THX-SUB is reproducing ground loop hum from elsewhere in your system

- Make sure interconnect and speaker cables are routed away from AC power cords and component power supplies to avoid induced hum
- Cross interconnects at 90 degrees to AC power cords and keep them separated by at least an inch. Also connect the power cord of your THX-SUB and receiver/processor and multichannel amplifier to the same AC outlet to keep the grounds all at the same potential avoiding hum

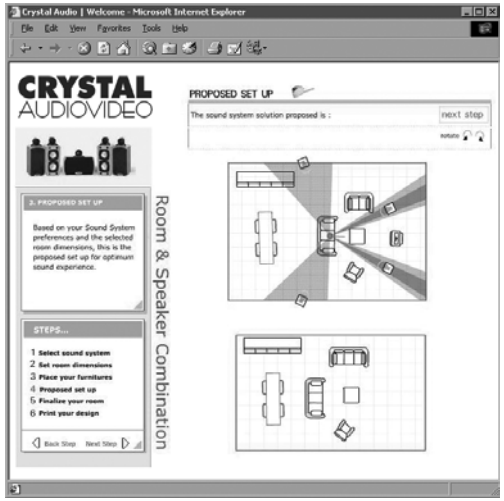
7. Specifications

Model nam	THX – T3	THX - SURROUND	THX - DIPOLE	THX - B1	THX - CENTER	THX-12SUB	THX-10SUBt	THX-10SUB
CROSSOVER TYPE	31/2-way	2-way	2-way	2-way	2-way	THX/Variable	THX/Variable	THX/Variable
MAGNETICALLY SHIELDED	✓	✓	✓	✓	✓	✓	✓	✓
WOOFER 6.5"	3	1	1	1	1			
WOOFER 12"						✓		
WOOFER 10"							✓	✓
TWEETER 1" NEODYMIUM MAGNET	1	1	2	1	1			
POWER (Wrms)	180	100	100	100	100	200	120	120
MAXIMUM POWER (Watt)	350	200	200	200	200			
SENSITIVITY (dB/W/m)	92	88	88	89	89	93	92	92
IMPEDANCE (Ohm)	4	8	8	4	4	4	4	4
FREQUENCY RESPONSE (Hz - kHz)	35-22k	35-22k	45-22k	45-22k	45-22k	20-350	20-350	20-350
BASS REFLEX	✓	✓	✓	✓	✓	✓	✓	✓
BI-WIRE GOLD PLATED BINDING POST	✓	✓	✓	✓	✓			
FRONT DIMENSIONS DxHxW (mm)	165x1200x160	165x1030x160	310x330x140	165x370x230	530x165x170	470x470x350	470x470x310	470x470x310

Room Acoustics Designer®

(Loudspeaker Placement Interactive Software)

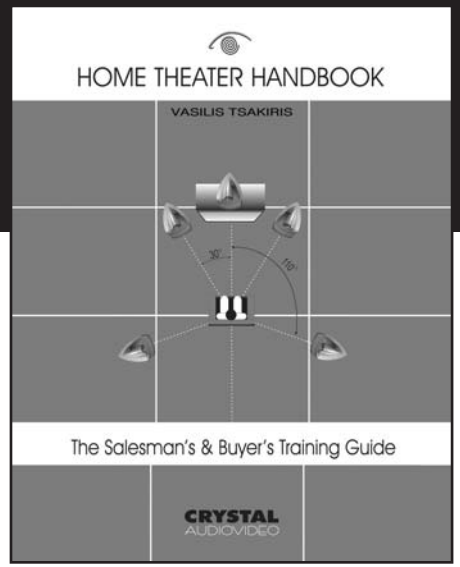
Room Acoustics Designer® is a unique interactive software package developed by Crystal Acoustics that offers several loudspeaker placement
solutions based on input from the user.
It easily guides you through to optimal placement of your multichannel home theater speakers.



The advantages of Room Acoustics Designer® are:

- Takes into consideration furnishings, their location, and the dimensions and placement of the TV or video display
- Offers suggestions using a friendly graphical user interface
- Change the seating position and a new series of suggestions are displayed

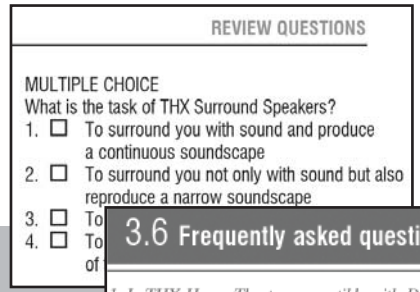
Room Acoustics Designer®
is patented software,
accessible free of charge
at Crystal Acoustics' website:
http://www.crystal-acoustics.com

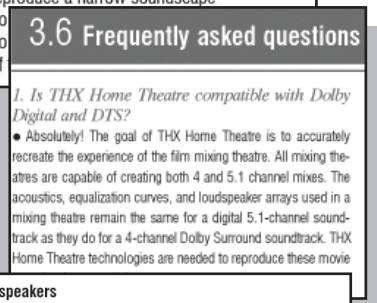


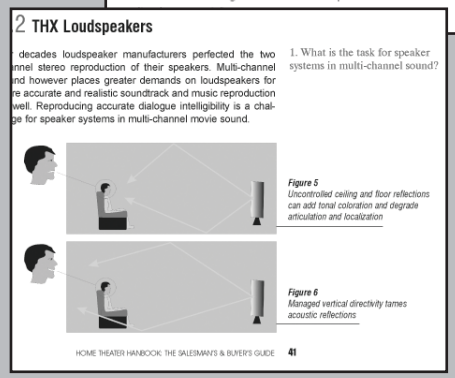
HOME THEATER HANDBOOK

"The Salesman's & Buyer's Guide"

This book offers all required information to make an educated selection of components and avoid the pitfalls of outdated or inappropriate components. Our handbook is a treasure chest of information and descriptions of the latest technologies and their impact.







It includes:

- An innovative training system
- Over 350 Questions and Answers
- Many Frequently Asked Questions with Answers (FAQ's)
- Over 100 color drawings and photos

THX® Certification assures the finest picture and sound quality for cinemas, mixing studios, home theatres and DVDs.

THX Ltd. was established by George Lucas to ensure that the entertainment consumer experienced music and films as the director intended.

CRYSTAL AUDIO

model: TX-T2 Tower Speaker

Crystal Audio TX-T2 loudspeakers are optimised not only for state-of-the-art home cinema sound but also for state-of-the-art multi-channel music reproduction. The standards applied by the Crystal Audio engineering team assure the very highest levels of performance.

Your **Crystal Audio TX-T2** loudspeakers can be used either as front or surround speakers and will help you experience true and accurate sound performance from your home theatre thanks to their unique features:

- **Free air rotating spherical tweeter** so that the high frequencies, free from unwanted diffractions, integrate immaculately into your room
- **Absolutely flat** frequency response with a ±1.5dB accuracy in the 80Hz – 20kHz band
- **Easy placement** thanks to:
  1. The special **THX Bass Management** specifications which help minimise interaction between your speakers and the room boundaries
  2. The use of an **external spherical rotating tweeter**, so that you won't have to move the whole speaker enclosure in order to have the best high frequency reproduction in the listening position
- **Electronic protection** for the tweeters
- **Magnetic shielding** so the speakers can be placed near your TV
- **Wide horizontal dispersion** to obtain full and flat frequency response across the room
- **Controlled vertical dispersion** to diminish the ceiling and floor reflections and provide superior imaging
- **High sound level** great dynamics and crystal clear undistorted sound thanks to:
  1. **High sensitivity** that is very important for low power AV Receivers
  2. **High power handling** for safe operation with powerful AV Receivers

Model name	TX-T2
CROSSOVER TYPE	2 1/2-WAY
MAGNETICALLY SHIELDED	✓
WOOFER 6.5"	2
TWEETER 1" NEODYMIUM MAGNET	1
POWER (W RMS)	150
MAXIMUM POWER (Watt)	300
SENSITIVITY (dB/2.83V/m)	91
IMPEDANCE (Ohm)	8
MINIMUM IMPEDANCE (Ohm)	4
FREQUENCY RESPONSE (Hz)	45 - 22k
BASS REFLEX	✓
BI-WIRE GOLD PLATED BINDING POST	✓
FRONT DIMENSIONS DxHxW (mm)	230x1030x194

CRYSTAL AUDIO

model: TX-B1 Bookshelf Speaker

Crystal Audio TX-B1 loudspeakers are optimised not only for state-of-the-art stereo or home cinema sound but also for state-of-the-art multi-channel music reproduction. The standards applied by the Crystal Audio engineering team ensure the very highest performance levels.

Your **Crystal Audio TX-B1** loudspeakers can be used either as front or surround speakers and will help you experience true and accurate sound performance from your stereo or home theatre thanks to their unique features:

- **Free air rotating spherical tweeter** so that the high frequencies, free from unwanted diffractions, intgratee immaculately into your room
- **Absolutely flat** frequency response with a ±1.5dB accuracy in the 100Hz – 20kHz
- **Easy placement** thanks to:
  1. The special **THX Bass Management** specifications which help minimise interaction between your speakers and the room boundaries
  2. The use of an **external spherical rotating tweeter**, so that you won't have to move the whole speaker enclosure in order to have the best high frequency reproduction in the listening position
- **Electronic protection** for the tweeters
- **Magnetic shielding** so the speakers can be placed near your TV
- **Wide horizontal dispersion** to obtain full and flat frequency response across the room
- **Controlled vertical dispersion** to diminish the ceiling and floor reflections and provide superior imaging
- **High sound level** great dynamics and crystal clear undistorted sound thanks to:
  1. **High sensitivity** that is very important for low power AV Receivers
  2. **High power handling** for safe operation with powerful AV Receivers

Model name	TX-B1
CROSSOVER TYPE	2-WAY
MAGNETICALLY SHIELDED	✓
WOOFER 6.5''	1
TWEETER 1'' NEODYMIUM MAGNET	1
POWER (W RMS)	100
MAXIMUM POWER (Watt)	200
SENSITIVITY (dB/2.83V/m)	90
IMPEDANCE (Ohm)	4
FREQUENCY RESPONSE (Hz)	65 - 22k
BASS REFLEX	✓
BI-WIRE GOLD PLATED BINDING POST	✓
FRONT DIMENSIONS DxHxW (mm)	230x270x194